Criteria Checklist for EBR

Prior to the first injections or amendments:

- Mapping Contaminant Locations and Concentrations
  - Locate and map LNAPL
  - Locate and map dissolved-phase benzene, at concentrations in excess of 5 ug/L
  - Calculate how much total LNAPL is present at the start of the EBR
  - Determine the amount of benzene in the LNAPL at the start of EBR
  - Determine time estimate for LNAPL removal
  - Provide details of how Pre-EBR LNAPL models were generated
  - Calculate the amount of sulfate needed to maximize benzene biodegradation
  - Provide details used to determine the above sulfate calculations
- Site Geochemistry to be Obtained
  - Groundwater temperature
  - pHs
  - ORP values
  - DO concentrations
  - Nitrate concentrations
  - Ferrous iron concentrations
  - Sulfate concentrations
  - Benzene concentrations
  - Hydrogen sulfide concentrations
- Indigenous Microbial Population, Pre-EBR
  - The total size of the indigenous microbial population in the injection areas
  - The major classifications of microbes composed this total population, and at what proportion of the total were each classification
  - The total size of the microbial population capable of conducting sulfate-reduction under current site conditions
  - The total size of the microbial population capable of biodegrading benzene, under current site conditions
  - The in-situ rate of benzene biodegradation
  - How much benzene was being converted into microbial biomass
  - How much benzene was being fully mineralized to carbon dioxide
  - Determine the dominant terminal-electron acceptor process for the indigenous microbial population, prior to any injections or amendments

During EBR, once per quarter

- Mapping Contaminant Locations and Concentrations
  - Locate and map LNAPL
  - Locate and map dissolved-phase benzene, at concentrations in excess of 5 ug/L
  - Calculate how much total LNAPL was present at the start of the EBR pilot
  - Determine time estimate for LNAPL removal

    - Provide details of how LNAPL models were generated
    - Calculate the amount of sulfate needed to maximize benzene biodegradation
    - For each sulfate injection, map area of influence of injection
    - Provide details used to determine the above sulfate calculations
- Site Geochemistry to be Obtained
    - Groundwater temperature
    - pHs
    - ORP values
    - DO concentrations
    - Nitrate concentrations
    - Ferrous iron concentrations
    - Sulfate concentrations
    - Benzene concentrations
    - Hydrogen sulfide concentrations
- Injection Information

Post-EBR

- Mapping Contaminant Locations and Concentrations
    - Locate and map remaining LNAPL
    - Locate and map remaining dissolved-phase benzene, at concentrations in excess of 5 ug/L
    - Calculate how much total LNAPL is present at the end of the EBR pilot
    - Calculate total LNAPL loss during EBR
    - Determine the amount of benzene in the LNAPL at the end of EBR
    - Determine total LNAPL benzene lost during EBR
    - Determine time estimate for the removal of any remaining LNAPL
    - Provide details of how Post-EBR LNAPL models were generated
    - Calculate the amount of sulfate needed to maximize remaining benzene biodegradation
    - Provide details used to determine the above sulfate calculations
- Site Geochemistry to be Obtained
    - Groundwater temperature
    - pHs
    - ORP values
    - DO concentrations
    - Nitrate concentrations
    - Ferrous iron concentrations
    - Sulfate concentrations
    - Benzene concentrations
    - Hydrogen sulfide concentrations
- Indigenous Microbial Population, Post-EBR
    - The total size of the indigenous microbial population in the injection areas
    - The major classifications of microbes composed this total population, and at what proportion of the total were each classification

- The total size of the microbial population capable of conducting sulfate-reduction under current site conditions
- The total size of the microbial population capable of biodegrading benzene, under current site conditions
- The in-situ rate of benzene biodegradation
- How much benzene was being converted into microbial biomass
- How much benzene was being fully mineralized to carbon dioxide
- Determine the dominant terminal-electron acceptor process for the indigenous microbial population, prior to any injections or amendments